

## REMARKS

Reconsideration of this application, as amended, is requested.

The application has method Claims 1 to 5 and 18 to 20 and bi-fold door and lift device Claims 13 to 17, 21 and 22.

Method Claims 1 and 18 have been amended to define a method of opening and closing a bi-fold door having first and second panels with top and bottom portions. Door lift devices mounted on the bottom portion of the second panel have rotatable members. As shown in Figure 5 of the drawing, door lift device 44 is mounted on door panel 19. An elongated flexible web 35 extends upward from lift device 44 to a roller 52 mounted on a top portion of first door panel 18. Web 35 trained over roller 52 extends downward to anchor 39. The second end of web 35 is connected to anchor 39. The operation of lift device 44 applies lift forces on panel 19 and panel 18 at anchor 39 to fold panels to open side-by-side positions as shown in Figure 2. Lift forces applied to the bottom portions of each panel during the opening of the bi-fold door distribute the forces on the panels and hinges. The claimed method includes training each web over a roller connected to a top portion of the first panel and anchoring each web to the bottom portion of the first panel. The web is aligned and maintained in alignment with the axis of rotation of the rotatable member. This ensures overlapping relation of the web around the rotatable member so that the first and second panels of the door move at an increasing rate of speed from the closed to this open position and a decreasing rate of speed from the open position to the closed position.

The overlapping relationship of the web around cylindrical member 77 is maintained by web guide plates 79 and 81 located adjacent opposite ends of the cylindrical member 77 and a closed end slot 88 in a shield 87 located around the cylindrical member 77. As seen in Figure 10, the lateral space between plates 79 and 81 is contiguous with the opposite edges of the web 35. The plates 79 and 81 and shield 87 confine the web to overlapping relationship during winding

and unwinding from cylindrical member 77. The closed end slot 88 in shield 87 aligns web 35 with cylindrical member 77. The overlapping relationship of the web during winding and unwinding processes predicates the moving of the door at an increasing rate of speed from the closed position to the open position and moving the door at a decreasing rate of speed from the open position to the closed position. This overlapping relationship of the web on the cylindrical member is always maintained by the guiding function of the plates 79 and 81 and the closed end slot 88 in shield 87. Figures 6 and 7 show the anchor 36 connected to the end of web 35. The anchor 36 is adjustable to take-up slack of the webs and equalize working length of the webs. The location of the anchor on the bottom portion of the first panel facilitates manual adjustment of the anchor.

In use, the webs are strong, require less maintenance than prior wire cables, last longer than wire cables and substantially reduce noise when the bi-fold door is opened and closed. The webs have at least a 5 to 1 safety factor. Prior bi-fold doors do not use door lift devices having flexible webs and do not open the door at an increasing rate of speed and close the door at a decreasing rate of speed.

Apparatus Claims 13 and 21 define the door lift devices mounted on the second panel of the bi-fold door. Each door device has an elongated flat and flexible web having first and second ends. The first end is connected to a rotatable member. The second end is connected to an anchor mounted on the lower portion of the first panel. The web is trained over a roller mounted on the top portion of the first panel. The roller is located between the rotatable member and anchor. Lift forces are applied to the first and second panels during the lift operation of the door. A reversible electric motor operating at a constant speed selectively rotates a member in opposite directions to wind and unwind the webs of all the lift devices on and off the member. The webs are wound in overlapping relation so that when the door is opened the rate of speed of

the opening of the door increases as the diameter of the overlapping web increases. When the door is moving from the open position to the closed position the rate of speed of the closing door decreases as the diameter of the overlapped web decreases. The webs are vertically aligned with the rotatable members. This alignment is maintained to ensure the overlapping relation of the webs around the rotating members during winding and unwinding of the webs around the rotatable members. The webs do not drift or move laterally during the winding and unwinding processes. The anchors as defined in Claims 17 and 22 include means to adjust the length of the webs to allow the bi-fold door to move to its full open and closed positions.

Reconsideration of the teachings of *Keller '914* relative to the method and apparatus claims is requested.

*Keller '914* discloses a conventional prior bi-fold door as described in the Background of the Invention and the prior art for the past 60 years. The *Keller '914* door and lift device, shown in Figure 8, comprising a motor 40, winch 46 and cable 48 wound on winch 46. The upper end of cable 48 is hooked to the top of the door. There is not disclosure of a roller with a web trained over the roller and the second end of the web anchored to the bottom of the panel 28. Winch 46 has a cylindrical drum having a uniform diameter. Cable 48 winds and unwinds along the length of the drum as shown in Figures 5 and 6. Guide structures are not used to move the cable 48 along the drum during the winding and unwinding processes. The opening and closing of the door episodes occur at a constant speed determined by the speed of rotation of the winch drum. In other words, the speed of opening of the door does not increase as the door opens. Also, the speed of closing the door does not decrease as the door closes.

The winches have wire cables, such as aircraft cable and cylindrical drums which are rotated with electric motors to wind and unwind the cables on and off the drums. The drums have uniform outer cylindrical surfaces which accommodate cables along the length of the drums. The cables

during winding on the drums can crisscross around the drums. The bi-fold door opening and closing episodes occur at constant speeds determined by the speed of rotation of the drums. The wire cables require periodic adjustments and maintenance. They are subject to wear which reduces their working life. In use wire cables can have frayed cable strands which must be corrected to reduce cable breakage. Wire cables wound on steel drums produce objectionable noise.

U.S. patents to *Ballyns et al* is a secondary reference related to roll-up door art. *Ballyns et al* discloses a winch mechanism 16 that includes a reversible motor 40 for driving a shaft 44. A pair of spools 46 are secured to opposite ends of shaft 44. A second spool 48 is connected to shaft 44 through a clutch mechanism 46. Clutch mechanism 46 is designed to permit spool 48 to slip as required in use to accommodate differences between the rate of winding on spools 46 and play out on spool 48. Spools 46 are connected with first strap members 70 to the lower panel of a roll-up door. A second strap member connects the spool 48 to the upper edge of the uppermost door panel. There are no shields associated with the straps and spools to maintain overlapping of the straps. The one-way clutch mechanism 54 allows spool 46 and shaft 44 to free wheel during closing of the door and spool 48 and to free wheel during opening of the door. The same spools and strap members are not used to open and close the door. *Ballyns et al* does not disclose nor suggest the use of a single rotatable member accommodating a flexible strap to both increase the speed of opening a bi-fold door and decrease the speed of closing a bi-fold door and shields associated with the strap members and spools.

The primary reference, *Keller '914*, applied to the method and apparatus claims does not disclose or suggest to one skilled in the art the claimed combination of method steps or combination of structure. There is no disclosure of elongated flexible webs trained over rollers mounted on the top portions of first panels and anchored to bottom portions of the first panels of bi-fold doors and guide structures associated with the webs to ensure overlapping winding of the

webs to achieve increase and decrease door movement speeds during opening and closing of the door. The wire cables of *Keller '914* are wound side-by-side along the length of the drums. One skilled in the art would not use cable guides to cause the cable to overlap around the drums. The total time for opening and closing the door in *Keller '914* is more than the total time for opening and closing Applicant's bi-fold door. Applicant's shorter door opening and closing time saves power and heat and cooling energy losses from the structure equipped with Applicant's bi-fold door and lift apparatus. The cables require periodic adjustments and maintenance and are subject to wear. Applicant's lift devices with webs and web guides are not the mechanical equivalent to the prior art cables and drums in lift devices for bi-fold doors. Applicant's devices are different structures that operate in a different manner and achieve functions that are not disclosed by *Keller '914*.

Winches having cables wound on drums to open and close bi-fold doors have been known in the prior art for at least 60 years. *Sanders, U.S. Patent 2,274,216, Feb. 24, 1942*. During this long period to time no one used flexible webs with winches to open and close bi-fold doors as defined in Applicant's method and apparatus claims. This indicates that it was not obvious to use flexible webs with bi-fold door lifting devices.

The Examiner's position that Applicant's lift devices with flexible webs for opening and closing a bi-fold door is the full mechanical equivalent of a cable lift devices as shown in the prior art is not supported by the structure, operation and results of Applicant's lift devices with webs for opening and closing a bi-fold door. Cable door lift devices do not have the same structure, they do not operate in same manner and do not produce the same results as Applicant's door lift devices with flexible webs. Therefore, cable door lift devices are not mechanically equivalent to Applicant's door lift devices with flexible webs.

The secondary references are remote roll-up door art that do not suggest Applicant's

claimed method and apparatus combination. *Ballyns et al* uses webs and drums with a clutch mechanism to increase the speed of both opening and closing movements of a roll-up door.

*Horn* does not use cables or webs to control opening and closing movements of roll-up door. In view of these facts it is submitted that a person skilled in the art of devices for opening and closing bi-fold doors would find that the teachings of *Keller '914* and *Ballyns et al* are insufficient to make, use and operate Applicant's door lift devices with flexible webs and web guides to ensure overlapping of the webs on rotatable members to increase and decrease the speeds of opening and closing of the bi-fold door.

*Bonacina* discloses an annular housing 4 around a drum 7 for accommodating a rope 9 used as a winch secured to a buoy for divers. This is remote art that is not related to bi-fold doors and devices to open and close bi-fold doors. The purpose of housing 4 is to support the drum 7 and provide an adjustable locking stopper 10 for rope 9. Stopper 10 does not axially guide rope 9 along the length of drum 7. One skilled in the art would not consider the teachings of *Bonacina* or would find the teachings of *Bonacina* insufficient to provide *Keller '914* with a shield to guide a web for overlapping relation about a rotatable member of a bi-fold door lifting device.

*Spangle* discloses a hand operated belt reel. There is no disclosure of a power driven winch. One skilled in the art would not reasonably review 117 year-old belt reels for structures useable in power driven winches. There is no suggestion for a person skilled in the art to use the belt reel of *Spangle* in a power driven winch.

*Sanders* is the known old cable lift device for a bi-fold door. There is no suggestion of a flexible web and guide and length adjustment for the web in a lift device for bi-fold doors. One skilled in the art would not find it obvious to use webs and adjustments for the webs from the teachings of *Sanders*.

Under 35 U.S.C. 103 commercial success of an invention must be considered in resolving the obviousness of the claimed apparatus and method of opening and closing a bi-fold door.

The relevant portion of 35 U.S.C. 103 provides:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

A judgment of obviousness requires that a determination as whether the claimed invention would have been obvious based on underlying factual inquiries, including: 1) the scope and content of the prior art, 2) the level of skill in the ordinary art, 3) the differences between the claimed invention and the prior art, and 4) secondary considerations of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 U.S.P.Q. 459, 467 (1966); *Monarch Knitting Machine Corp. v. Sulzer Morat GMBH*, 139 F.3d 877, 881, 45 U.S.P.Q.2d 1977, 1981 (Fed. Cir. 1998).

Secondary considerations, such as long-felt need, commercial success, and initial expressions of disbelief by experts should be considered in every case for whatever probative value they have and are not limited to cases where patentability is a "close" question. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 U.S.P.Q. 871 (Fed. Cir. 1983).

As the Federal Circuit Court has explained:

[O]bjective evidence such as commercial success, failure of others, long-felt need and unexpected results must be considered before a conclusion on obviousness is reached. \* \* \* Indeed, as then Chief Judge Markey said in *Stratoflex, Inc. v. Aeroquip Corp.* . . . "evidence of secondary considerations may often be the most probative and cogent evidence in the record. It may often establish that an invention appearing to have been obvious in light of the prior art is not." In spite of the importance that the secondary considerations of commercial success, long felt need, and failure of others played in the considerations of both the PTO and trial court, the infringer conspicuously fails to address them.

*Minnesota Mining & Manufacturing, Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976

F.2d 1559, 24 U.S.P.Q.2d 1321 (Fed. Cir. 1992).

Applicant requested that the First Declaration of Michael L. Schweiss and Exhibits A and B and the enclosed Second Declaration of Michael L. Schweiss and Exhibit C be considered in the reexamination of this application.

The Examiner determined that the sales figures are significant and that there is no nexus between increased sales and the point of novelty of the present invention. Mr. Schweiss states in his Declaration of February 5, 2003, page 3, that the sales of the LIFT STRAP® devices disclosed in this patent application could not have been achieved without the bi-fold door opening and closing devices disclosed and claimed in patent application Serial No. 09/783,960. In paragraph 10, page 4 of his Declaration, Mr. Schweiss states that the need for the lift device and its commercial success are directly connected to the new and novel method and apparatus for opening and closing a bi-fold door described and claimed in the patent application. The Declaration and Exhibits A, B and C of record show the nexus or connection of the claimed invention and commercial success of Applicant's bi-fold doors with winch lifting devices having flexible webs.

The evidence of record of the commercial success and customer satisfaction statements is favorable to the patentability of the claimed method and apparatus. The nonobviousness of the claimed method and apparatus is supported by the commercial success of the claimed invention.

Applicant submits that there is no evidence of record of any impetus or motivating force which would have impelled one skilled in the art to make Applicant's claimed method and apparatus from the teachings of the reference patents. Applicant submits that a *prima facie* case of obviousness has not been made out by the Examiner. *See, In Re Clay*, 23 U.S.P.Q.2d 1058 (Fed. Cir. 1992); *Ex Parte Levengood*, 28 U.S.P.Q.2d 1300



(Bd. Pat. App. 1993).

Applicant requests allowance of Claims 1-5, 13-15 and 17-22.

Respectfully submitted,

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July 19, 2004  
Date of Signature